The Usage of 5G Technologies for the Purpose of Business Improvement

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Abstract

The subject of this paper is to investigate the impact of 5G technologies usage on business improvement. The main is to analyse the attitudes, perceptions, and degree of acceptance of the application of 5G technologies. The main hypothesis was to confirm that with a high degree of acceptance of 5G technologies, the conditions for business improvement will be created. The primary research was conducted with a questionnaire on a sample of 122 respondents, and the main hypothesis is that the high level of acceptance of 5G technologies creates prerequisites for business improvement. In addition to the basic hypothesis, additional hypotheses were set: Knowledge of 5G technologies positively affects attitudes about the impact of 5G technologies, and perceived skill in using 5G technologies affects the perceived usefulness of 5G technologies in business. Based on the research results, it can be confirmed that the acceptance of the use of 5G technologies has a positive effect on business and collaboration. Also, there is a positive connection between the perceived skill of using 5G technologies and the perceived usefulness of 5G technologies in business, as well as a positive connection between knowledge of 5G technologies and the attitude about the impact of 5G technologies.

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Introduction

The primary research objective was to examine attitudes, perceptions, and the level of acceptance of 5G technologies. The main goal is to assess how this acceptance influences the business environment, particularly through the collaboration aspect. The study focused on understanding the strong interdependence between 5G acceptance and effective business collaboration, where only a high level of 5G adoption can drive successful collaboration. The specific goals included: assessing knowledge and current use of 5G technologies, evaluating the intention to use 5G technologies in the future, perceived skill determination, ease of use, and usefulness of 5G technologies. Furthermore, the research paper's authors will focus on exploring attitudes towards the impact of 5G on personal, technological, and economic levels and assessing perceptions of 5G technology security.

In line with the research objectives, the primary hypothesis is established as follows: H: A high degree of 5G technologies' acceptance creates the conditions necessary for business improvement. The primary hypothesis suggests that a strong 5G technology acceptance will foster conditions that enhance business performance and collaboration. To accept or reject this hypothesis, the study examined the relationship between the intention to use 5G technologies in future business operations and its perceived usefulness in business contexts. In addition to the primary hypothesis, two additional hypotheses are proposed: H1: Knowledge of 5G technologies positively influences attitudes about its impact. To assess this, the study examined the relationship between respondents' knowledge of 5G technologies and their attitudes regarding its impact. H2: Perceived skill in using 5G technologies positively affects its perceived usefulness in the business environment. This hypothesis was tested by exploring the connection between respondents' perceived skill in using 5G technologies and their perception of its usefulness in business contexts.

Mobile Telecommunication Networks

Wireless communication, which gained momentum in the late 90s, has spread globally through mobile technology and its users. Since its inception with 1G in the late 80s, wireless communication has evolved through various technological advancements, reaching 4G in 2010. Now, the latest 5G technologies promise to bring revolutionary changes to communication with their enhanced speed and advanced features.

1st Generation networks – 1G

The cellular network system began in the 1980s, dividing local areas into cells, each with a base station using analog signals. This 1G technology, operating in the 150 kHz frequency band, allowed frequency reuse in non-adjacent cells, increasing user capacity. The first 1G network was launched by NTT in Tokyo in 1979, soon covering all of Japan. Nordic Mobile Telephony (NMT) introduced 1G to Europe in 1981, and it expanded to the U.S. in 1983, followed by the UK, Mexico, and Canada. The 1G system used AMPS (Advanced Mobile Phone System) but had the drawback of poor sound quality (Nitesh & Kakkar, 2016).

2nd Generation Networks – 2G

In 1991, 2G mobile technology was introduced in Finland using the Global System for Mobile Communications (GSM) standard, which marked a shift from analog to digital signals, enabling voice transmission at up to 64 kbps and new services like Short Message Service (SMS) and Video Message Service (VMS). The 2G operated within a 30-200 kHz bandwidth and included technologies in addition to GSM such as Code-

division multiple access (CDMA) (Salih et al., 2020). Further wireless network development brought 2.5G in the 1990s brought General packet radio service (GPRS) technology, allowing packet-switched data on existing GSM networks and supporting the rise of the Internet. By doing so, Enhanced Data rates for GSM Evolution (EDGE) were introduced which addressed the 1G's limitations with international roaming. EDGE is another example of a 2.5G network technology (Nitesh & Kakkar, 2016).

3rd Generation Networks – 3G

Launched in the 2000s, 3G network technology provided greater reliability and much faster data transfer speeds than 2G. It supported advanced services like web applications, audio, video, and IP-based services (e.g., Skype) (Salih et al., 2020). Using a broadband wireless network and Packet Switching, 3G improved signal clarity and enabled faster internet, video calls, Global Positioning System (GPS), car navigation, and video streaming, primarily serving as a broadband voice channel (Nitesh & Kakkar, 2016).

4th Generation networks – 4G LTE

To overcome 3G's limitations, 4G technology was developed, marking the fourth generation of mobile wireless standards. 4G brought significant enhancements, including better sound quality, high video resolution, and much faster data transfer rates. Initially launched by TeliaSonera in 2009 in Stockholm and Oslo, 4G offers speeds up to ten times higher than 3G and is primarily based on Long Term Evolution (LTE), an international IP-based standard (Nitesh & Kakkar, 2016). Originally used for military and scientific purposes, 4G expanded to all wireless devices as demand for faster communication grew. While 1G to 2G network technologies improved voice quality and 3G added data capabilities, 4G further advanced voice quality and dramatically increased data speeds.

5th Generation Networks – 5G

The fifth generation (5G) is the latest in wireless mobile broadband technology, offering faster speeds, reduced latency, and the ability to support numerous devices simultaneously with greater energy efficiency. Built on a combination of 4G and the WISDOM system, 5G enhances network efficiency through shorter frequencies and higher bandwidth (Ezhilarasan & Dinakaran, 2017). It supports real-time access, mission-critical communications, and massive Internet of Things (IoT) connection possibility, with speeds up to 20 Gbps and the capacity to connect many devices at once with minimal latency (Koi-Akrof et al., 2023). The 5G can download any high-definition (HD) movie in seconds and is designed to power new services, expand mobile ecosystems, and support the IoT (Li, Da Xu, & Zhao, 2018). With 5G technologies, multiple objects like smart cities, smart homes, vehicles, and other intelligent systems can be connected. The speed and reliability of 5G networks also present significant opportunities for seamless electronic healthcare (e-health) systems. Unlike 4G networks that rely on "macro cells," 5G uses "small cells," leading to lower energy consumption and faster installation. This advancement overcomes the bandwidth limitations of previous generations, allowing for increased system utilization. 5G technologies are seen as transformative technology for mobile internet and IoT, enabling more connected devices and faster, more reliable data exchange (Koi-Akrof et al., 2023). As a result, 5G technologies offer a wide range of possibilities that will increasingly impact global business in the future.

The Utility of 5G Networks in Business

For businesses, the advancement of 5G technologies offers significant opportunities for growth. It can enhance existing products and enable the development of new ones. Additionally, 5G's robust security features help companies better defend against online threats and potential attacks. Moreover, 5G can lead to substantial cost savings for businesses. The global 5G market is projected to generate substantial revenue, reaching USD 16.8 billion by 2028, with a compound annual growth rate of 34% (Deltec Bank, 2021). The following section provides an overview of the usefulness of the 5G network in business and its impact on selected digital technologies such as the Internet of Things, artificial intelligence, and similar.

Concept Internet of Things (IoT)

The Internet of Things (IoT) is a major game-changing technology in the business environment, which, combined with 5G technologies, enables extended connectivity and data transmission. This transformation is leading to "smart" cities and the integration of automated processes into daily life. In manufacturing and logistics, real-time tracking systems, powered by 5G network technology, improve inventory management, shipment tracking, and overall production efficiency, reducing costs and minimizing product loss (Koi-Akrof et al., 2023). As reliance on mobile IoT grows, 5G is expected to revolutionize industries in the next 20 years, enhancing services like waste management and energy production while reducing environmental impact (Sumatosoft, 2024). 5G-specific network services will lower costs and boost industrial competitiveness, with economies lacking 5G likely facing significant disadvantages (Mockel and Makala, 2019).

Artificial Intelligence

Artificial intelligence (AI) collects vast data for machine learning, and together with 5G, it's set to revolutionize this decade. The synergy of these technologies will drive emerging innovations and open new business opportunities in both consumer and business sectors, beyond what current technologies can achieve. 5G and network transformation establish a smart, secure, and reliable infrastructure to support new services and applications (Saadi & Mavrakis, 2021). The evolution of network technologies and IoT, combined with AI, allows for new revenue streams and enhanced human-machine interaction, enabling real-time, remote activities like distance learning and repairs (Koi-Akrof et al., 2023).

Hybrid Work

The concept and development of "hybrid work" gained prominence after the COVID-19 pandemic in fall 2020. Initially, it was seen as flexible work done partly on-site and partly remotely, using digital tools. Methods like telecommuting and ICT-based mobile work have been evolving for decades, allowing employees to work independently or collaboratively, even when geographically dispersed. Schaffers et al. (2020) note that the future of telecommuting and digital work will be closely tied to technological advances, the spread of 5G, AI applications, and smarter mobile devices, all supported by broadband mobile internet and digital platforms.

Holograms

The combination of 5G and AI will enable new or enhanced technologies, including ultra-fast speeds for holograms, augmented reality, and virtual applications. Holographic-type communication (HTC) involves real-time recording, compressing, and transmitting objects to remote locations, where they are projected using holographic screens. Holograms are created from a point cloud, formed by processing images from different angles, and require bandwidths of 2.06 Gbps to 1 Tbps. HTC is considered a key technology following the Augmented reality (AR) and Virtual reality (VR) (Taleb et al., 2021, Zhou et. al., 2024).

Virtual Reality

Virtual reality (VR) is a multimedia-based technology that integrates software, hardware, sensors, AI, and robotics to create immersive 3D experiences in sight, sound, and touch. Supported by equipment like stereo glasses and data gloves, VR allows interaction with virtual environments through natural behaviors (Zheng, 2021). While VR replaces the real environment with a virtual one, it requires significant infrastructure. Recently, VR and augmented reality (AR) have started utilizing 5G's high-speed capabilities (Orlosky et al., 2017). The combination of 5G and VR enhances image clarity, smarter displays, and seamless transitions, offering users a more immersive and interactive virtual world (Deng et. al., 2023).

Digital Nomads

Digital nomads use technology to work remotely from anywhere with internet access, enjoying flexibility in their work environment and schedule (Verma, 2023). Technologies like 5G, the metaverse, and AR will further support their integration into various workspaces. They require a reliable broadband connection with at least 10 Mbps speed and use platforms like Slack, Zoom, and Google Meet, which need high bandwidth for stable communication.

"Just in time" Technology

5G and AI can revolutionize Just-in-Time (JIT) technology and smart factories by enabling more agile robots and precise predictive maintenance. As 5G becomes central to Industry 4.0, JIT logistics will benefit from enhanced agility and efficiency. Combined with IoT and AI, 5G network technology can support JIT systems that reduce inventory levels while managing demand fluctuations. Near real-time tracking will help distribution centers efficiently manage inventory, reducing the need for excess stock and lowering overhead costs globally (Landis et al., 2020).

SWIFT networks

The Society for Worldwide Interbank Financial Telecommunications (SWIFT) system enables most international money and security transfers, serving as a global messaging network for financial institutions to securely exchange information like money transfer instructions. Over 11.000 member institutions send an average of 44.8 million messages daily (Seth, 2023). The advent of 5G technologies is expected to allow banks and financial companies to offer innovative mobile services, thanks to 5G's low latency, high data capacity, and reliability, providing services almost anywhere.

Data centres

Data centers are expected to grow significantly in the coming years, driven by the adoption of IoT and AI. 5G will be key in providing the high bandwidth and low latency needed for these centers. The first major impact of 5G will be the rapid transfer of large data volumes through faster, virtualized networks. Data centers will be crucial for 5G applications and will drive new deployments (Hall, 2020).

Stock exchange

A stock exchange is an organized marketplace for trading money, currencies, securities, and certain goods. The 5G network technologies will potentially revolutionize high-frequency mobile trading by significantly reducing latency, benefiting brokerage firms and allowing investors to execute more orders quickly, critical for day traders using high-frequency algorithms. The higher frequencies of 5G will also reduce system errors, improving the reliability of the trading network (Deltec Bank, 2021).

Smart cities and smart destinations

The 5G network significantly impacts urban development and collaboration. The concept of "smart cities" arose with advances in information technology and Industry 4.0, aiming to improve urban efficiency (Strugar, Ćurlin, & Jaković, 2018). This section explores the difference between a smart city and a smart destination, along with the role of 5G network technology in their development and its importance for collaboration. A smart city optimizes infrastructure management to provide high-quality services to its citizens. It monitors and integrates key infrastructure including roads, bridges, tunnels, rail/subways, airports, seaports, communications, water, electricity, and even large buildings, to enhance resource use, plan maintenance, and ensure safety (Khomsi & Bédard, 2016). By leveraging IT and digital data, a smart city improves residents' quality of life, integrates technology into the urban environment, and promotes innovation and knowledge transfer. In essence, it represents a new approach to using technology for better citizen services (Pivar, 2021). As the economy and society rapidly evolve, the limitations of traditional city management are increasingly apparent. With global urbanization on the rise, many countries are adopting smart cities to address challenges in population, resources, and the environment. The 5G network, with its ultra-high speed, low latency, and vast connectivity, is poised to significantly impact smart cities (Deloitte, 2020). Offering innovative solutions to urban challenges, 5G relies on infrastructure managed by city authorities and drastically reduces network response times compared to 4G network technology. While many 5G initiatives are still pilot projects, they showcase the potential applications of this technology in public services (Metropolis, 2021). 5G technologies, with their advanced features, are well-suited to meet the needs of smart cities by enabling large-scale IoT adoption (Rao & Prasad, 2018). Key features include Device connectivity (supports a vast number of devices, such as sensors and cameras, in homes, streets, and public spaces, crucial for smart transportation, public safety, and surveillance), very high data bandwidth, ultra-low latency, "Always-on" connectivity (essential for high-mobility environments like cars and trains, ensuring reliability for driverless cars and traffic control) and energy efficiency (necessary for the increased number of connected IoT devices, with scalable and adaptive 5G networks supporting smart city applications). Ultimately, 5G network technologies enable cities to reduce commute times, enhance public safety, and improve smart

grid efficiency. Artificial intelligence, robotics, cashless payments, augmented reality, and virtual reality are already disrupting various industries worldwide. These technologies are advancing Web 3.0, or the Semantic Web, by enabling data integration and application interaction, enhancing data processing, creativity, and collaboration, which contributes to the development of smart destinations (Panyadee et al., 2023). A smart destination uses ICT-based solutions to improve access to tourism services and enhance the quality of life for locals (Deloitte, 2020). Digital transformation is progressing at different speeds globally, with increased connectivity and infrastructure making it more accessible. Organizations can leverage cloud-based and Big Data solutions, supported by sensors and smart city initiatives. Examples include augmented reality, data-sharing infrastructures, and blockchain certification systems (PwC, 2022). In this context, 5G technologies are essential for meeting the growing demand for faster, more reliable networks and supporting Big Data and cloud-based solutions.

Methodology

The research was conducted online with a sample of 122 respondents, consisting of adult citizens of the Republic of Croatia, during September and October 2023. The study included participants of both genders. The questionnaire was organized into four sections: the first section focused on general socio-demographic questions, the second on knowledge, usage, and intentions to use the 5G network, the third on the perception of skills, ease of use, and the usefulness of the 5G network, and the fourth on attitudes regarding the impact and safety of 5G technologies. The questions were designed with responses based on the Likert scale, allowing respondents to express their level of agreement with the statements. The questionnaire was developed using elements from the studies "Public Perception On Huawei's Global Race for 5G - A Case Study of India V.S. USA" by Agarwal, Imad, and Thakur (2021), and "Acceptance Determinants of 5G Services" by Al-Maroof et al. (2021). The questionnaire was conducted anonymously through a Google form. Completing the questionnaire took approximately 10 minutes, and participation was entirely voluntary and anonymous. Once collected, the data were analysed using IBM SPSS Statistics. Descriptive statistics were employed for data analysis, with frequencies (f) and percentages (%) calculated for nominal and ordinal variables. Appropriate statistical tests were applied to test the hypotheses, and the results are presented in both tables and graphs.

Research results

In the survey, 59.8% of participants were women and 40.2% were men. Age-wise, the majority were aged 26 to 35 (45.9%), followed by those under 25 (23%). A smaller proportion of respondents were between 36 and 45 years old (14.8%), 46 to 55 years old (10.7%), and over 56 years old (5.7%). Regarding education, most participants had a secondary vocational education (60.7%), and in terms of employment status, the majority were employed (85.2%). All sociodemographic characteristics are shown in Table 1.

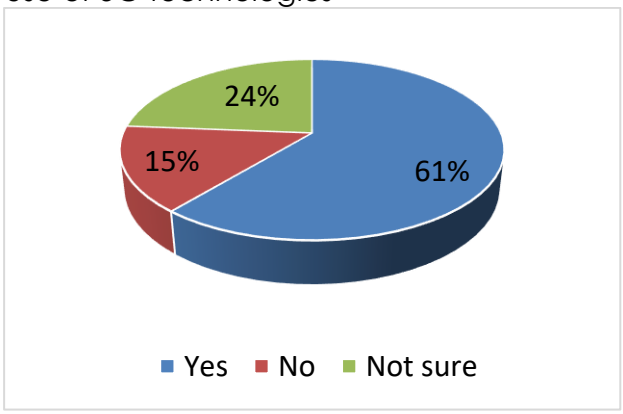
Table 1
Sociodemographic characteristics of the respondents

Category	Subcategory	Frequency (n)	Share (%)
Gender	Men	49	40.2
	Women	73	59.8
Age	18-25	28	23
	26-35	56	45.9
	36-45	18	14.8
	46-55	13	10.7
	56 and above	7	5.7
Education Level	Secondary School	74	60.7
	Associate/Bachelor's Degree	18	14.8
	Graduate/Master's Degree and above	30	24.6
Employment Status	Unemployed	1	0.8
	Student	15	12.3
	Retired	2	1.6
	Employed	104	85.2

Source: Authors data (2023)

Furthermore, 61% of respondents reported that they have used or are currently using 5G technologies. Meanwhile, 8% indicated they do not know what 5G technologies are, and 19% expressed uncertainty about it. Additionally, 15% stated that they had never used 5G technologies, and 24% were unsure whether they had (Figure 1).

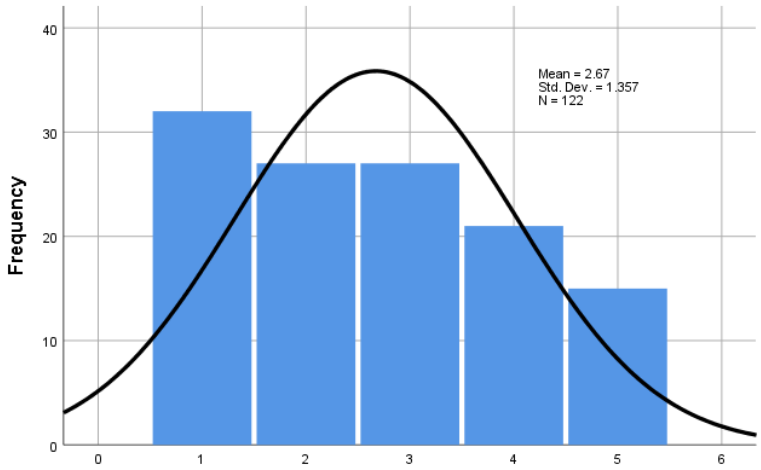
Figure 1
Use of 5G technologies



Source: Author's illustration

The survey also explored respondents' intentions to use 5G technologies by asking them to rate their agreement with various statements on a scale from 1 to 5, where 1 meant "I do not agree at all" and 5 meant "I completely agree." From the results, 29.5% of respondents agree or strongly agree that they actively use 5G technologies, while a larger portion, 48.3%, disagree or strongly disagree with this statement (Figure 2).

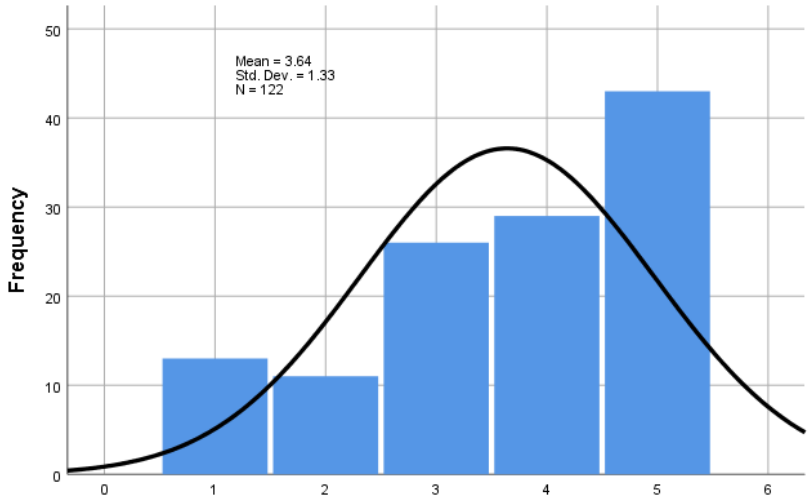
Figure 2
Histogram of active use of 5G technologies



Source: Author's illustration

It's assumed that current 5G usage primarily depends on its availability, so respondents were asked additional questions about their intentions to use 5G technologies in the future. On average, respondents tend to agree that they intend to use 5G technologies if available (mean value = 3.64). However, the standard deviation shows variability in responses, as reflected in the table where 19.7% of respondents disagree or strongly disagree to use 5G technologies. Additionally, 21.3% of respondents remain undecided on this issue (Figure 3).

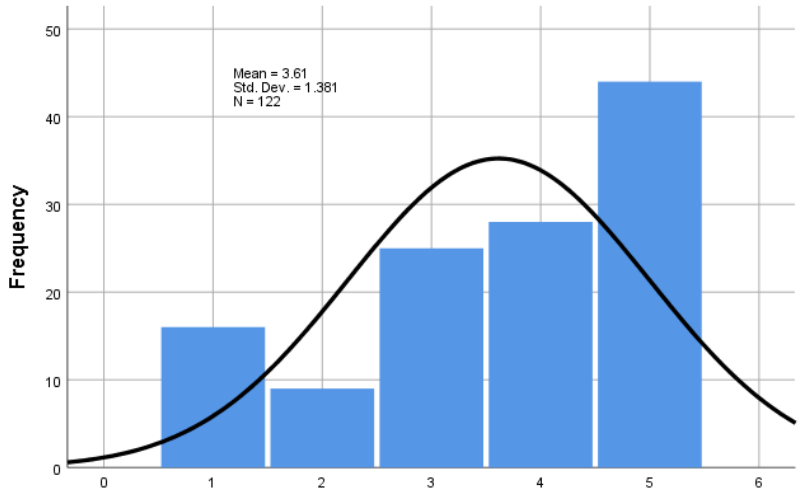
Figure 3
Histogram of intention to use 5G technologies if it is available



Source: Author's illustration

The results regarding the intention to use 5G technologies in future business closely mirror those for the general intention to use 5G services if available (mean value = 3.61). Similarly, 20.5% of respondents either disagree or strongly disagree with this statement, while the same percentage of respondents are undecided, neither agreeing nor disagreeing with the statement (Figure 4).

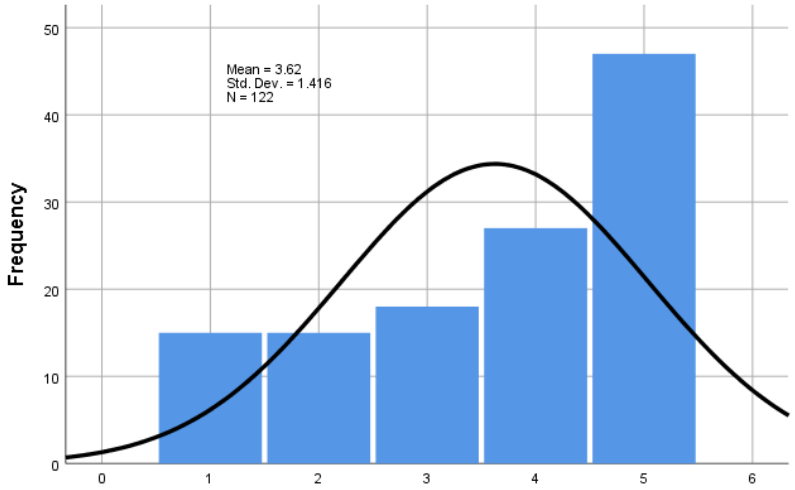
Figure 4
Histogram of intention to use 5G technologies in future business



Source: Author's illustration

As with the previous questions, respondents generally agree with the statement that they intend to use 5G technologies for personal purposes (mean value = 3.62). However, 24.6% of respondents disagree or strongly disagree with the intention to use 5G privately, and 14.8% are undecided (Figure 5).

Figure 5
Histogram of intention to use 5G technologies for personal purposes



Source: Author's illustration

In the next set of questions, respondents shared their opinions on the perceived skill in using 5G technologies, its ease of use, usefulness, impact, and safety. The perceived skill, ease of use, usefulness, and safety of 5G technologies were rated on a scale from 1 to 5, where 1 means "I do not agree at all" and 5 means "I completely agree." Additionally, attitudes about the impact of 5G technologies were assessed on a scale from 1 to 5, with 1 indicating an extremely negative impact and 5 indicating an extremely positive impact. The perceived skill in using 5G technologies is detailed in Table 2.

Table 2
Perceived skill in using 5G technologies

	N	Minimum	Maximum	Mean	Std. Deviation
I am skilled enough to use 5G technologies	122	1	5	3.42	1.285
I can use my skills to download any material via 5G technologies	122	1	5	3.39	1.276
I am skilled enough to use different applications and 5G technologies	122	1	5	3.45	1.318
Valid N (listwise)	122				

Source: Author's data (2023)

On average, respondents are neutral about whether they are skilled enough to use 5G technologies. However, they generally agree that they are skilled enough to use various applications and services through the 5G network. This finding aligns with earlier results regarding the intention to use services via 5G technologies.

Table 3 below provides an insight into the results of the perceived ease of use of 5G technologies.

Table 3
Perceived ease of use of 5G technologies

	N	Minimum	Maximum	Mean	Std. Deviation
I think it is generally easy to use 5G technologies	122	1	5	3.58	1.304
I think it is easy to use 5G technologies for business purposes	122	1	5	3.56	1.240
I think using 5G technologies is easy to learn	122	1	5	3.67	1.301
Valid N (listwise)	122				

Source: Author's data (2023)

On average, respondents agree that 5G technologies is generally easy to use, both for personal and business purposes, and that it is easy to learn. However, these results are marginal, with large standard deviations indicating significant variability in responses. A closer analysis reveals that a substantial portion of respondents neither agree nor disagree with these statements, suggesting a possible lack of familiarity with 5G technologies and their use.

Table 4 shows the perceived usefulness of 5G technologies.

Table 4
Perceived usefulness of 5G technologies

	N	Minimum	Maximum	Mean	Std. Deviation
Using 5G technologies will be/is useful in my personal life	122	1	5	3.40	1.271
Using 5G technologies will be/is useful in my business life	122	1	5	3.50	1.287
Using 5G technologies will be/is useful to improve my business	122	1	5	3.52	1.241
Using 5G technologies will be/is useful for downloading apps and services	122	1	5	3.57	1.253
I think 5G infrastructure is beneficial for the future of the economy	122	1	5	3.58	1.272
I think that 5G infrastructure can improve the business of any company	122	1	5	3.61	1.263
Valid N (listwise)	122				

Source: Author's data (2023)

On average, respondents agree with the statements regarding the perceived usefulness of 5G technologies. However, when it comes to its usefulness in personal life and other areas, many respondents neither agree nor disagree. This pattern, observed in a more detailed analysis, may suggest a limited understanding of 5G technologies and their potential. Table 5 presents the perspectives on the impact of 5G technologies.

Table 5
Attitudes on the impact of 5G technologies

	N	Minimum	Maximum	Mean	Std. Deviation
How do you see the impact of 5G technologies on your daily life?	122	1	5	3.45	1.214
How do you see the social impact of 5G technologies?	122	1	5	3.46	1.186
How do you think 5G technologies will affect the economy?	122	1	5	3.57	1.192
Valid N (listwise)	122				

Source: Author's data (2023)

On average, respondents believe that 5G will have neither a positive nor negative impact on their daily lives, and they express a similar view regarding its social impact. However, they hold a positive view of 5G technologies' impact on the economy. The final question addressed respondents' perceptions of the safety of using 5G technologies (Table 6).

Table 6
Perception of security of 5G technologies

	N	Minimum	Maximum	Mean	Std. Dev.
5G technologies in my country is completely safe	122	1	5	3.27	1.179
5G technologies in the world is completely safe	122	1	5	3.25	1.194
Valid N (listwise)	122				

Source: Author's data (2023)

On average, respondents are neutral regarding whether 5G technologies is completely safe both nationally and globally. However, a more detailed analysis reveals that a significant portion of respondents do believe that using 5G technologies is safe.

Discussion

After presenting the results of the research, the following is an examination of the set hypotheses.

With 99% confidence, the hypothesis that a high degree of acceptance of 5G technologies in business creates conditions for business improvement is confirmed. This conclusion is supported by the strong positive correlation observed between the intention to use 5G technologies in business and the perception of its usefulness for business (Table 7).

Table 7
Testing the influence of the degree of acceptance of 5G technologies on the usefulness of 5G technologies in business

		Using 5G technolog-ies will be/is useful in my business life	Using 5G technologies will be/is useful to improve my business	I think 5G infrastruct-ure is beneficial for the future of the economy	I think that 5G infrastruct-ure can improve the business of any company
I intend to use 5G technologies in my future business	Pearson Correlation	.871**	.851**	.877**	.874**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	122	122	122	122

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Author's data (2023)

With 99% confidence, the hypothesis that knowledge of technology positively influences attitudes toward the impact of 5G technologies is confirmed. This hypothesis is accepted based on the findings, which show a weaker yet positive correlation between knowledge of 5G technologies and attitudes regarding its impact (Table 8).

Table 8
Testing the impact of knowledge of 5G technologies on attitudes about the impact of 5G technologies

		How do you see the impact of 5G technologies on your daily life?	How do you see the social impact of 5G technologies?	How do you think 5G technologies will affect the economy?
Do you know what 5G technologies is?	Pearson Correlation	.377**	.300**	.379**
	Sig. (2-tailed)	.000	.001	.000
	N	122	122	122

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's data (2023)

With 99% confidence, the hypothesis that perceived skill in using 5G technologies positively influences its perceived usefulness in business is confirmed. This conclusion is supported by the results, which show a strong to very strong positive correlation between the perceived skill in using 5G technologies and its perceived usefulness in a business context (Table 9).

Table 9
Testing the influence of perceived skill in using 5G technologies on the perceived usefulness of 5G technologies in business

		Using 5G technologies will be/is useful in my business life	Using 5G technologies will be/is useful to improve my business	I think 5G infrastructure is beneficial for the future of the economy	I think that 5G infrastructure can improve the business of any company
I am skilled enough to use 5G technologies	Pearson Correlation	.727**	.779**	.740**	.754**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	122	122	122	122

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's data (2023)

The research shows that most respondents are familiar with 5G technologies, have used it, and are interested in using it both personally and professionally. While they find 5G easy to use, they consider their skills moderate and rate its security as average. There is a strong positive correlation between 5G acceptance and its perceived usefulness in business, confirming that higher acceptance leads to business improvement. A weaker positive link was found between knowledge of 5G and attitudes towards its impact, and a strong correlation between perceived skill and usefulness in business. The study concludes that 5G acceptance positively impacts business and collaboration, but highlights a general lack of knowledge about 5G, which affects its acceptance.

The research highlights that a high acceptance of 5G technologies significantly enhances business efficiency, speed, and quality. A strong link was found between knowledge of 5G and positive attitudes toward it, underscoring the importance of education for successful integration. Additionally, perceived skill and usefulness of 5G greatly influence future usage plans, suggesting that investing in skill development can boost acceptance of technological innovations. Organizations are advised to incorporate 5G as a key business tool, invest in employee training, infrastructure, and security, and collaborate with telecom partners. Continuous research is essential to ensure 5G's ethical and effective application.

Conclusion

This paper explores the impact of 5G networks for the purpose of business improvement. The research focuses on analysing attitudes, perceptions, and the level of acceptance of 5G technologies, with the central hypothesis being that a high degree of acceptance will create conditions for business improvement. In today's globalized and digitized society, enhanced collaboration is essential for addressing business challenges. The rapid evolution of business information systems has been significantly influenced by advancements in computer technology, networks, the Internet, and mobile telecommunications. Since the 1980s, mobile networks have evolved from 1G to the current 5G technologies, which offer higher speeds, reduced latency, support for a large number of devices, and energy savings. As a new global wireless standard, 5G is designed to greatly increase traffic capacity and network efficiency. For businesses, 5G provides opportunities to enhance existing products and develop new ones, impacting areas like IoT, artificial intelligence, virtual reality, hybrid work, holography, and JiT technology. The recent Covid-19 pandemic has further accelerated the development of 5G. Additionally, 5G plays a crucial role in urban development and smart destinations, which are vital for the growth of modern enterprises.

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